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Apocalypse Cow: The Effect of BSE on Canada's Beef Industry

By
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Introduction

On May 20, 2003, brain tissue from a cow that was sold in northern Alberta tested positive for bovine spongiform encephalopathy (BSE). Reacting to this information, governments in 34 countries² prohibited the import of Canadian ruminant animals and products derived from ruminants.³ The import ban created turmoil in the Canadian beef industry as exports normally generate approximately 40 percent of the industry's revenues. The real or potential risks associated with BSE have become a major economic and political issue and have been a rude and stunning wake-up call to stakeholders in the Canadian beef industry.

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² Imports of Canadian bovine and ovine products were prohibited or restricted in Kenya, South Africa, China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan, Vietnam, Turkey, Croatia, Romania, Russia, Ukraine, Kuwait, Saudi Arabia, United Arab Emirates, Australia, New Zealand, Antigua, Argentina, Barbados, Brazil, Chile, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Peru, Trinidad and Tobago, Uruguay, Mexico and the United States.

³ Ruminant animals include, among others, cattle, bison, goats and sheep.

The purpose of this paper is to detail the short-term impact of the single case of BSE in Canada and to identify possible long-term implications for an export oriented industry. The long-term consequences of the BSE crisis may prove to be more important than its immediate costly and disruptive effects. To alleviate the concerns of foreign governments regarding Canadian beef, industry stakeholders will have to scrutinize and enhance the beef supply chain. This may involve applying the same level of attention and exactitude to upstream (supplier) activities as to the demands of final consumers, redefining livestock protocols for animal diseases, and re-aligning relationships with trading partners.

Background

The beef industry is an important part of the Canadian agri-food economy and the second largest (after wheat) earner of foreign exchange in the agricultural sector. As of January 1, 2003, there were 13.8 million head of cattle and calves in Canada compared to 96.1 million head in the United States (USDA, 2003). Seventy two percent of fed cattle in Canada are located in Alberta, 17 percent in Ontario and remainder are located within the other eight provinces. Table 1 shows that beef and live cattle exports added about C\$4 billion to the beef industry's revenues in 2002; not shown are about \$1 billion in imports – almost all from the United States. Net exports have been increasing in recent years. Canada is the third largest beef exporter in the world⁴, with 76 per cent of exports going to the United States (Table 2).

Canada and the United States have spent the last 15 years seeking ways to harmonize their respective red meat industries. Though periodic border hassles remain, the increased two-way movement of live animals and meat products has been well documented and indicates the nearly complete North American integration of these important agricultural industries. Beef and live animals have moved across the border almost without hindrance.⁵ This has resulted in greater production and marketing efficiencies in both countries.

BSE in Canada

Only two cases of BSE have ever been diagnosed in Canada. The first was found in December 1993 in a beef cow that had been imported from Britain in 1987. The animal carcass and all animals in the herd it came from were destroyed. Stricter rules to test cattle were implemented in 1994 and in 1997 the feeding of animal material to ruminants was banned. On May 20, 2003, a second case was reported in one beef cow from Wanham, Alberta. The animal was condemned at slaughter and the carcass did not enter the food or feed chain. Although more than 2,700 animals eventually were destroyed and tested as part of the investigation, no other cases were found.

The response to the single occurrence of BSE in Canada was swift, decisive and aggressive (Figure 1). When news broke on May 20th that the United States government had banned Canadian imports, cattle futures prices on the Chicago Mercantile Exchange dropped the daily 1.5-cent limit. Cattle prices at one Alberta auction dropped from \$1.20 a pound to 32 cents before most cattle were taken home again. Slaughter plants in Canada stopped accepting new cattle. The Canadian government stopped all beef shipments not already in transit. Some live animals already in the United States were returned to Canada.

Government Assistance

On June 18, 2003 federal, provincial and territorial Ministers of Agriculture announced a national BSE Recovery Program to provide temporary assistance for the Canadian cattle and beef industry. The package contained two key elements. First, producers were eligible to receive taxpayer transfers for

⁴ In 2001, Australia accounted for 23% of world beef exports, the United States 16%, Canada 15% and Brazil 11%.

⁵ The Canadian government prohibits imports of live animals during certain periods of the year on the basis of four diseases: anaplasmosis, tuberculosis, blue tongue and brucellosis.

Table 1: Canadian Live Cattle Exports to the United States

		Quantity (# of head)			Value (millions of C\$)		
		2000	2001	2002	2000	2001	2002
Slaughter	Steers	358,961	424,335	346,237	\$464.60	\$621.86	\$478.92
	Heifers	195,182	285,805	248,399	\$244.40	\$393.54	\$329.33
	Cows	171,488	257,584	372,294	\$138.00	\$230.59	\$299.01
	Bulls	44,286	53,575	57,448	\$59.50	\$79.45	\$77.83
Feeder		115,524	190,538	574,992	\$110.60	\$186.37	\$487.56
Other		78,864	94,318	87,082	\$110.10	\$143.41	\$149.31
Total Cattle Exports		964,265	1,306,155	1,686,452	\$1,127.20	\$1,655.20	\$1,821.96

Source: Canfax Annual Report, 2002.

Table 2: Canadian Beef and Beef Product Exports

	Quantity (tonnes)			Value (millions of C\$)		
	2000	2001	2002	2000	2001	2002
Destination						
U.S.A	318,464	355,942	373,432	\$1,382.21	\$1,688.70	\$1673.22
Mexico	53,189	69,674	75,809	\$180.25	\$271.69	\$282.52
Japan	28,390	29,245	23,982	\$162.02	\$171.37	\$95.84
S. Korea	20,593	9,420	17,254	\$98.56	\$28.64	\$59.51
Taiwan	2,655	2,991	4,026	\$16.07	\$15.62	\$20.97
Hong Kong	2,112	1,664	570	\$8.97	\$7.22	\$2.78
China	1,203	1,405	2,494	\$3.14	\$4.11	\$6.69
SE Asia	1,434	754	2,204	\$1.56	\$1.34	\$2.48
C&S America	7,099	7,524	7,526	\$7.06	\$9.03	\$7.55
Caribbean	3,607	5,519	3,398	\$5.55	\$11.41	\$6.76
EU	422	220	67	\$2.00	\$0.78	\$0.23
Russia	2,623	2,437	4,638	\$2.43	\$2.97	\$4.32
Other	4,125	2,934	4,742	\$6.43	\$13.75	\$17.79
Total Beef Exports	445,916	489,729	520,142	\$1,876.07	\$2,226.61	\$2,180.65

Source: Canfax Annual Report, 2002.

cattle owned as of May 20, 2003 that had subsequently been sold for slaughter in Canada. Beef producers received transfers when the price of cattle fell below a reference price, based on market value in the United States. The amount was calculated as a percentage of the difference between the reference and market prices, where producers received a lower percentage of the difference as the average price declined. Second, processors were provided with incentives to sell or otherwise move surplus meat out of inventory after May 20. The idea was to free up storage space, thus allowing processors to operate at increased capacity to serve the domestic market. These two measures were to be in place until the United States border was reopened to beef products, or until the approximately 900,000 cattle on feed as of May 20 had been slaughtered (except for cull cows, veal and other ruminants for which the program would operate no later than August 31). The maximum cost to taxpayers was \$460 million (C\$276 million from the federal government, C\$184 million from provincial and territorial governments).

Figure 1: Canadian BSE timeline

- **1997** - A black angus cow is believed to be born at Baldwinton, Saskatchewan or another unnamed farm. Cow spent time on at least two other farms.
- **January 31, 2003:** Cow shows signs of illness and is sent for slaughter at provincial abattoir. Believed to have pneumonia and declared unfit for human consumption by Alberta Agriculture inspector. Head kept in freezer at provincial laboratory pending routine testing. Remains sent to rendering plant and made into feed.
- **May 16:** Alberta Agriculture laboratory tests cow's brain for BSE as part of routine surveillance. Notifies CFIA of preliminary test results indicating possible BSE infection. Tissue sent to Winnipeg for further testing May 17.
- **May 18:** Winnipeg laboratory detects BSE in tissue and sends it to World Reference Laboratory in Weybridge, England for final confirmation.
- **May 20:** WRL confirms positive BSE in tissue sample. Farm that sold the animal is placed under quarantine by the CFIA. By 1:30 a.m. CST, the U.S. issues notice to block all imports of Canadian cattle & beef products. Other countries follow suit.
- **May 26:** Seventeen herds quarantined or culled for testing.
- **June 9:** CFIA completes investigation and presents report to review panel of international experts.
- **August 8:** US Secretary of Agriculture announces that firms can apply for permits to export low risk product including boneless cuts from animals less than 30 months and boneless veal from animals less than 9 months. No live animal exports are allowed. Mexico quickly follows suit.
- **September 10:** First truckloads of boneless beef enter the US from Canada.

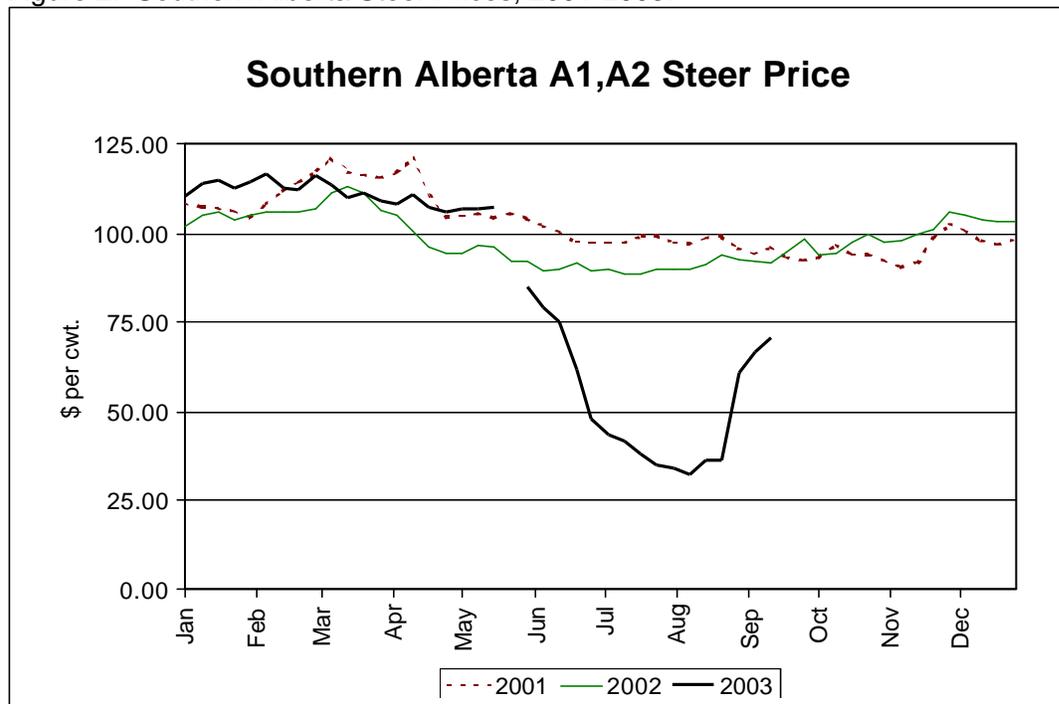
Source: *The Western Producer*, May 28, 2003.

By early August, slaughter activity had doubled from late May and about 725,000 cattle were moved into the domestic market. Figure 2 illustrates that steer prices in Alberta decreased from C\$105/cwt prior to May 20th to as low as C\$30/cwt. Since taxpayer transfers compensated producers for some of their loss, the maximum taxpayer transfer quickly reached C\$460 million. As a result, the federal minister of Agriculture and Agri-food announced two additional measures to further assist the Canadian livestock sector. The first was a C\$36 million extension to the Government of Canada's commitment to the national BSE Recovery Program. The second initiative provided advance payments to producers as a transition measure until a new business risk management program is implemented nationally. With provincial participation, program extension funding could cost taxpayers more than C\$60 million.

In August, the Alberta government announced a third financial aid program aimed at further helping feedlot owners. Unlike previous aid programs, the Alberta Fed Cattle Competitive Market Adjustment Program initially had no end date and no limit on the financial obligation of taxpayers. Under this program, fat cattle could be purchased and either slaughtered or held in a feedlot. The Alberta Fed Cattle Competitive Market Adjustment Program ran from August 25 to September 13.

On October 9 the Alberta government announced a final support package for the cattle industry. It included two programs, one that covered the remaining steers and heifers that were on full feed as of May 20, 2003; the other provided assistance to livestock producers who had market-ready cull cows and bulls as of September 1, 2003. The cull program assisted cow/calf producers with expenses associated with maintaining cattle that would normally be sent to slaughter.

Figure 2: Southern Alberta Steer Prices, 2001-2003.



Source: Ken Perlich, *Cattle on Feed Report*, August 18, 2003.

Re-opening the Border

An intensive three-week investigation on the origins, movements, progeny, and rendered parts of the infected cow (involving the slaughter and testing of 2,700 animals) culminated in a major report by the Canadian Food Inspection Agency (CFIA). An international committee of experts⁶ reviewed the report and offered high praise. All scientific evidence pointed to the safety of the rest of the Canadian beef herd.

Following presentation and discussion of the report, it was hoped the United States government would quickly re-open its border to Canadian beef and live animals. These hopes were dashed, however, when the Japanese government announced that imports of American beef (that amounts to about US\$ 800 million per year) would be halted by September 1 unless the United States could guarantee that its beef contained no product from Canada. This greatly complicated the border opening.

On August 8, the American Secretary of Agriculture Ann Veneman announced that the United States would permit the importation of low-risk beef products from Canada under a permit system. Firms could apply to export boneless cuts from animals less than 30 months of age and boneless veal from calves under nine months of age. The border would remain closed to the export of live animals for the foreseeable future. Though the announcement would accommodate slightly less than half the previous level of exports of Canadian product to the United States, it gave instant cheer to the frustrated (and financially devastated) beef industry in Canada. Three days later, the Mexican government followed with a similar announcement. Killing protocols and a system of import permits still had to be developed however. Finally, the first Canadian product began to cross the border in early September, 113 days after the disease was announced and the border was closed.

⁶ The team consisted of Prof. U. Kihm (Switzerland), Prof. W. Hueston (USA), Dr. D. Heim (Switzerland) and Dr. S. MacDiarmid (New Zealand).

On October 31, 2003, the USDA published a proposed rule aimed at ending the ban on imports of Canadian cattle under 30 months old. The proposed rule creates a new U.S. category for low incidence countries, like Canada, that have had effective BSE safeguards in place prior to detection, and that have adopted additional measures based on risk analysis. It also outlines proposed protocols for the resumption of imports of certain live ruminants and ruminant products and byproducts from Canada. Interested parties have 60 days (until January 4, 2004) to make submissions in support of it or raise concerns. This will be followed by a review of submissions, after which the U.S. could reopen the border to live cattle under 30 months of age from Canada. However, the border remains closed to exports of live animals and meat from cattle older than 30 months, bison, sheep, goats and other ruminants. This has put considerable strain on cow-calf producers who have no ready market for their annual slaughter of animals culled from their breeding herds. There have been reports of cull cattle fetching less than ten cents a pound. The inventory of these potential cull animals has increased as producers have refrained from marketing them at a loss. Marketing of the annual run of weaned calves has produced more volatility in prices than is usual in western Canada. Alternate bouts of pessimism and optimism among feedlot buyers have sent prices down and up by twenty or more cents per pound.

Implications and Issues

The financial chaos endured by industry stakeholders during the BSE crisis demonstrates the vulnerability of this export-based industry to a sudden border closure. While producers can adjust rations and feeding schedules, and beef products can be stored for some time prior to consumption, the capacity for short-term adjustments in the industry is limited. Feedlot operators need to purchase feed for their animals and bankers become nervous about extending further credit when sales of finished animals are disrupted. Operators can reduce rations so the animals grow more slowly, but heavier animals are subject to major discounts in the marketplace when they finally can be sold. In addition, freezer capacity is limited and available space quickly becomes filled with slower moving cuts. The marketing channel can quickly become bottlenecked.

The crisis reinforced the need for continuous investment, improvement and extension of the cattle identification system, initiated after several years of debate, on January 1, 2001. Developed by industry stakeholders and the Canadian Food Inspection Agency, the purpose of the Canadian Cattle Identification Program is to identify each beef or dairy animal in Canada using an ear tag. The tag enables inspectors to trace animals that have moved beyond their "herd of origin" to ensure that reportable diseases and food safety defects are contained and eliminated. Although participation in the program was less than comprehensive, it helped to track animals that had any previous connection with the condemned cow. An industry in which producers supply a perishable product dependent on export markets can ill afford a supply chain that cannot quickly isolate problem situations.

The single incidence of BSE in Canada is certain to increase the probability that regulations in the United States for mandatory labeling of meat according to country of origin will be implemented by September 30, 2004. Although the entire meat trade and most important livestock organizations, including the National Cattlemen's Beef Association and the National Pork Producers Council, continue to oppose the country of origin labeling scheme, the BSE occurrence in Canada has re-energized U.S. interests that support labeling as a way to discourage Canadian livestock and meat imports.

Slaughtering and processing of beef in Canada has also been changed. The federal government announced that, effective July 24, specified risk materials -- brain, skull, eyes, tonsils, vertebral column, spinal cord and all dorsal root ganglia from cattle over 30 months of age, and small intestines of all cattle -- would no longer be allowed to enter the human food chain. These are the materials that are suspected of carrying BSE across the species barrier and causing the new variant Creutzfeld-Jacob disease in humans.

The single incident of BSE has dealt a major financial shock to the rendering industry in Canada. Since 1997, the use of ruminant meat meals in feed of ruminant cattle has been prohibited. That has now been extended to all meat, bone and feather meals. Ruminant rendered material may still be used for

feeding hogs and chickens, which cannot contract the mad-cow disease, but this may be restricted on the notion that if such material is available in the feed trade it could be illegally used in cattle feeds, especially where feed is prepared and mixed on the farm.

This tragic episode points to the need for a suitable safety net for a vulnerable export industry. The beef industry in Canada has been very competitive internationally, adding about C\$3 billion to Canada's balance of payments annually in recent years. Until this year, the industry has had minimal government assistance. Since the mid 1990s, the producer subsidy equivalent for the beef industry has varied between six and nine percent (OECD, 2003).

There is no private insurance available for beef producers in Canada for a BSE type disaster. Instead, the federal and provincial governments are revising the taxpayer-funded producer safety net through the Agricultural Policy Framework⁷. As part of this framework, the Canadian Agricultural Stabilization Program will allow producers to protect their farm enterprise against income declines. The philosophy of the program is that taxpayers and producers should share the burden of replacing lost producer income. To participate, producers are required to make a deposit a participating financial institution for their share in protecting a reference margin. For smaller losses, producers and taxpayers share the burden equally. For larger losses, the taxpayers' share increases to four times the amount contributed by the producer.

The Way Forward

Canada's beef industry has been severely strained as a result of the BSE episode in 2003. A number of lessons appear to have been learned and measures implemented to reduce the chances of further infections. Specific risk materials have been banned in the use of animal feeds. Increased inspections have been mandated. A new laboratory facility to detect livestock diseases in Edmonton, Alberta will enable scientists to test about 25,000 cattle per year, up from the 850 tests performed in 2002 in Alberta. Across Canada, about 3,200 tests were performed in 2002, but with new facilities this could increase to 65,000 per year. The industry has imposed much stricter rules on animal identification. The Canadian Cattle Identification Agency recently decided to adopt Radio Frequency Identification tags and to phase out the familiar bar coded tags by January 1, 2005. The majority of producers seem to have learned and accepted the need for increased measures to assure the safety and acceptability of their product for foreign (as well as domestic) consumers.

Canadian consumers have shown no loss in confidence in the safety of Canadian beef. Indeed, many communities and agencies have sponsored beef promotions resulting in much higher sales of product than normal in western Canada. There is some evidence that pork sales have deteriorated due to the increased sales of beef during the summer of 2003.

The incident clearly shows the need for improved methods to deal with border closures. The Office International des Epizooties has a protocol to close borders immediately on discovery of BSE and other serious diseases. However, there is no similar science-based mechanism to re-open the borders when scientific procedures ensure there is no significant chance of further incidences of the disease. This can be devastating for any industry that is highly dependent on export markets for a perishable product. International negotiations are needed to find solutions to this problem.

With the separation of the two markets, prices in the United States have reached record levels in October 2003 -- US\$116/cwt in Kansas and \$120/cwt in Nebraska (Farmers Independent Weekly, 2003). Canadian producers have looked with envy at the divergence in prices between the two countries.

⁷ The Agricultural Policy Framework is the structure of agricultural policy in Canada for the first part of the 21st century.

It would be a serious setback to growth and productivity in the beef industries of both Canada and the United States if long-term trade between the two countries is restricted. Consumers in both countries have come to rely on safe and nutritious beef made available at reasonable costs. The best way to ensure long-term competitiveness of beef relative to other meat products is continue the practice of harmonizing rules and standards of production throughout North America.

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Lottery Economics: The Role of Luck, Skills and Endowments in Determining Who Gets the Toys

by
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(This paper is an adaptation of Dr. Wandschneider's Scholar's Address at the annual meeting of the Western Agricultural Economics Association in Denver, Colorado, July 2003)

"The race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, but time and chance happeneth to them all." -- Ecclesiastes 9:7-12

Why do some people receive large incomes and wealth, while others live in poverty? One view is that market rewards go to those who are productive – through either their own labor or their property. This view is codified in the marginal productivity theory of standard economics. Another view is that wealth and income are distributed according to socially defined positions. For instance, in classical economics, class determines earnings. But, what of the Preacher's words above? What role does luck have in determining who gets the toys?

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